

A COMPUTERIZED TRADING CARD SYSTEM

FIELD OF INVENTION

5 The present invention is directed to electronic trading cards which are used to play a game on a computer terminal. Specifically, electronic trading cards are implemented using smart card technology to control access to a computer game program.

10 The hobby of collecting and trading trading cards based on sports figures, cartoon characters, and other persona has been enjoyed widely over the decades. A trading card may contain pictures of a famous person as well as information regarding that person. For instance, baseball player cards which have been very popular in the United States, include the picture of the baseball player as well as various statistics regarding the player's performance. The cards are issued in limited numbers, and over
15 time may appreciate in value. Card owners may typically sell or trade the cards, at the enhanced value, for other cards or consideration. In other cases, children collect trading cards based on cartoon characters and may use them to either play board games against other card holders or simply as a low value collecting experience.

20 Electronic video gaming devices have proliferated because of the popularity of personal computers, and because lower cost microprocessor based games have become economical. The games are constituted by computer programs which are executed on a conventional PC, or in some instances over a network connection which accesses video game software
25 running on a remote computer which operates as a server. The computer software games may simulate such popular pastimes as baseball, football, basketball or golf. A user is presented with various selections under the game program control, enabling him to play the game by signaling a

selection from his personal computer to the network computer. The combination of the playing card and computer games has been described in patents such as U.S. Patent No. 5,689,561. These applications make trading cards an integral feature of a computer game, such as a floppy disk.

5 The trading cards are constituted by a computer readable medium, such as a floppy disk, which transfers a key code to the computer system to unlock a companion CD ROM program which contains a game to be played.

The present invention seeks to improve these systems by providing a trading card in the form of a smart card which is read by a local computer. The local computer may, on its own, or via a network connection such as an Internet connection, access a computer game program.

SUMMARY OF THE INVENTION

15 A system for collecting electronic trading cards is provided which makes use of a smart card storing information related to a famous person or character. The smart card is read by a local computer, and transfers security information to the local computer for permitting playing of a computer game. The system may be used in connection with a remote server which contains the computer game software. The trading card is packaged with various information displayed on the exterior of the trading card relating to a character or famous sports figure.

20 When the related computer game is implemented by a program running on a remote computer server, a security function is implemented in the smart card allowing the trading card holder to play the game from a remote computer connected to the computer server. Embedded security routines within the smart card microprocessor are read into a user's computer to establish a session with a computer game program running on the remote server.

In a preferred embodiment of the invention, information from the game program server may be transferred to the trading card, representing the user's performance during playing of the game. The remote server can read the identity of the card and prevent two users from simultaneously playing the game using the card if a previous user trades or otherwise grants access to the smart card to a subsequent user.

DESCRIPTION OF THE FIGURES

Figure 1A is a front view of an electronic trading card in accordance with the present invention;

Figure 1B is the view of an opposite surface of the trading card shown in Figure 1A;

Figure 1C illustrates the architecture of a smart card used in accordance with a preferred embodiment of the present invention;

Figure 2 illustrates the system for playing a game using the electronic trading card;

Figure 3 illustrates the flowchart used to install the base software for reading a smart card and executing a game using the smart card;

Figure 4 illustrates execution of software when a game is played on the user's computing system;

Figure 5 illustrates the execution for playing a game on-line from a remote server;

Figure 6 illustrates a screen presented by the server for selecting a game to be played;

Figure 7 illustrates the concept of a rotisserie baseball game utilizing electronic trading cards;

Figure 8 illustrates a screen presented for playing a game using electronic trading cards;

Figure 9 illustrates a subsequent screen presented when first learning to play the wizard's game of Figure 8;

Figure 10 illustrates the initial screen presented to the card holder for identifying the progress of play;

Figure 11 illustrates a screen presented to the holder of the electronic trading card for learning spells;

Figure 12 illustrates a fresh screen for playing a game of Wizards against another wizard; and

Figure 13 illustrates the first screen shown a participant in the game of Wizards.

DESCRIPTION OF A PREFERRED EMBODIMENT

Figures 1A and 1B illustrate an electronic trading card in accordance with one embodiment of the invention. The electronic trading card 11 is contained in a package roughly the same size as conventional trading cards used by the general public. On the exterior of the trading card 11 is a familiar figure, representing a sports figure or other personality which is of interest to collectors and traders of the trading cards. These may be as conventional as famous sports figures, such as baseball players, cartoon characters or other celebrities.

In the case of an electronic trading card representing a sports figure, the picture of the sports figure is shown on one side as in Figure 1A, and various statistics about the sports figure are included on the reverse side in the format of a conventional trading card, as shown in Figure 1B.

The electronic trading card 11 includes a row of connectors 13 which connect the smart card electronics through a card reader to a computer. In current smart card applications, the smart cards are connected via a computer network to a host computer, wherein data may be transferred to

and from the smart card such as in banking applications. In accordance with the present invention, the smart card may be used to transfer data by the user in possession of the electronic trading card 11 to a local or a remote computer which is executing a game program.

5 In one embodiment of the invention, the smart card is organized into a system shown in Figure 1C. The processor 22 is connected to a data bus 20 which is connected to the contacts 13 of the smart card. A read only memory 21 includes information which will be used when a user attempts to play a game or otherwise use the smart card 11. A non-volatile
10 RAM 23 is also provided which can receive information during the playing of a game, representing a score obtained by the user, or updated statistics concerning the player represented by the trading card. The information downloaded from game playing software running at a remote computer site may be written to the non-volatile RAM 23 where it is available for display
15 by the user any time the user reads the smart card 11.

The smart card 11 includes a ROM 21, storing information specific to the card including a general card identification number 21(b), which identifies the card as belonging to a game to be played, or some other type of interactive activity. A card-specific number 21(a) is disclosed which is
20 unique to the specific card which is related to the general card identification number 21(b). When the electronic trading card is read in the card reader, the remote computer which is playing a game will compare the card specific number 21(a) and general card identification number 21(b) to be certain that the card is valid from from a known relationship which exists between
25 the general card ID 21(b) and the card-specific ID 21(a).

A security algorithm 21(c) is also stored within the ROM 21. The security algorithm represents data necessary to access the game being run on the remote computer server. The security algorithm is uploaded to the

remote computer server where it is combined with information running on the remote computer server to enable access to the game playing software. Unless the remote computer server receives the security information access to the game playing software is denied.

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Ins a1
A system for utilizing the electronic trading card 11 is shown more particularly in Figure 2. Figure 2 illustrates a computing facility 25 at the user's location for accessing the electronic trading card 11. The computing facility includes a smart card reader 26 connected to a port of processor 27. A display 28 and keyboard 29 are provided to permit the interactive playing of a game related to the contents of the trading card 11.

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In accordance with a preferred embodiment, a user's computing facility 25 is used as terminal equipment for computer game software being executed on a remote server 32. The remote server 32 is connected via a network 30, which may be the Internet, through appropriate interfaces to the computing facility 25.

The computing facility 25 includes certain base systems software necessary for communicating with the electronic trading card 11 as well as the remote server 32.

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Ins a2
The base system software for the computing system 25 which may be downloaded from the server 32 includes a card reader interface. Additionally, card related information for verifying the card is downloaded along with graphic elements which are presented on the display 28 identifying a card type read from the card reader 26. The foregoing system which is capable of reading the electronic trading cards and writing to the cards from the server 28 provides an interactive game capability for the holders of the electronic trading cards 11.

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In the system of Figure 2, all of the base system software may be downloaded from the remote server 32, or may be resident in the processor

27 from a CD ROM which is supplied in a start-up kit for those who collect and utilize the electronic trading cards 11.

The sports card 11 stores invariable information about the player, which does not change, which is stored in the ROM 21. Additionally, variable information included in the non-volatile RAM representing a player data file may be subsequently updated with various statistics from the computer game server. These statistics may relate to the actual performance of the player represented by the trading card. Thus holders of the card may evaluate the performance of a player and use the information for making trading decisions.

Ins a 3
23 ~~The protocol for data transfer between the smart card based electronic trading card 11 and a remote server 32 containing a computer game program will conform to IEEE standards. The IEEE standard control can retrieve information from the smart card, and upload the data upon request of the computer game running on server 32. Further, using the IEEE standards, updated statistics for a player may be transferred from the server 28 to the electronic trading card non-volatile RAM 23.~~

The computer program running on server 32 includes a database 33 for maintaining game information. In one embodiment of the invention, the database 33 includes the following four tables:

Players TABLE: This table contains information about each player, including the player's ID, the game ID, the type (i.e., baseball, basketball, etc.), the name of the player, a graphics image of the player, other personal statistics of the player, whether he bats left- or right-handed, etc., the birth date and the position played by the player.

Positions TABLE: The positions table maps a number (Position ID) to a position as an abbreviation. For example, the position of first base in an interactive baseball game played using the electronic trading card is set

with a specific reference number, i.e., first base may be symbolized by the number "2".

Teams TABLE: This table contains information about a team that the user is creating in a baseball interactive game. It includes a card ID, the name of the team, type of team, points scored and players on the team. During the process of playing a rotisserie-type baseball game, as will be described with respect to Figures 6 and 7, a team comprises each of the players represented by an electronic trading card 11.

Users TABLE: This table contains information about a particular player of the interactive game, such as his first name, last name, e-mail address.

Card TABLE: This table contains information about all the electronic trading cards that are being used to play a game, i.e., the card type, card ID, player ID, etc.

The foregoing database is used to play an interactive baseball game, and anticipates that information about the players will be updated on a regular basis, representing the real life statistics of players identified by the electronic trading cards. The database is, therefore, updated on a frequent basis, as the real life statistics associated with the players becomes the means by which to determine a score.

The present invention, which is advantageously implemented on a remote server connected via an Internet connection to a local user, may also be loaded directly on a local user's computer system 25. However, it is considered advantageous to operate the game over the Internet, through a remote server which can be updated to provided a variety of game options for the users of the electronic trading cards.

Figure 3 illustrates the execution sequence for playing a computer game. The game software on the CDROM in the start-up kit is installed on

Ins 94 24 ~~the internal storage of a computer serving as the user's home computer~~
computing system. Alternatively, the base software can be delivered to the
user through the Internet from a web site maintained by the trading card
issuer. The base software contains computer games and drivers that allow
5 the local computer to recognize and communicate with the smart card
reader/writer 26, and allows the local computer system 27 and remote
computer server 32 to read and write information to the smart card. The
smart card reader/writer 26 is connected to the computer port 27 in step 41,
and the user runs the base software programs in step 42. Execution of the
10 base software results in the trading card information being displayed on the
computer monitor 28 and includes computer games and the option to
~~connect to a remote computer on which a computer game is executed.~~

Ins 95 25 ~~The user is presented with a decision as to whether or not a game is~~
to be played on a user's computing system, or whether it is to be played on
15 ~~a remote computer such as server 32.~~

If the game is played locally on the user's computing system 25, then
execution proceeds as shown in Figure 4. Figure 4 is entered in step 50 by
the user selecting a game option through conventional point-and-click
controls in step 50 on the user's computer system. The base software
20 resident on the local computer's internal storage accesses the smart card
reader/writer 26 to establish a communication session with the smart card.
The base software running in the user's computer 27 determines in
decision block 52 whether or not a card is being read by the reader/writer
26 by checking the unique card code and general ID card. As these two
25 numbers are related for a given card type, it is possible to decide whether
or not a fraudulent card might be inserted in the card reader 26. In the
event the card cannot be validated by comparing the general and specific

card identification numbers, a message is displayed in step 53 that the card is not valid.

Ins 96
16 ~~Even if the card is determined to be valid, the base software reads the general card ID to identify which game is associated with the card. The game stored on the internal storage medium selected from the "play games" option of step 50 then determines from the stored algorithm code read from the smart card is combined with the computer code retained within the game software. Once the combination is validated by the game software, access to the game is given to the user.~~

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Ins 97
17 ~~Figure 5 represents a similar scenario wherein a user chooses to play a game on-line, by contacting a web site on server 32 to gain the game software. The base software resident on the local computer's internal storage includes the software necessary to connect to the remote computer in step 61, once the appropriate icon has been selected to go on-line. The local base software contains a web browser program and instructions to run a computer modem. Once a connection is made to the remote server 32, software running on server 32 loads a game program for play. The remote computer links to a user's computer and reads the smart card when inserted in the smart card reader/writer 26 in step 63. As in the stand-alone version of the game, the remote software first checks to see that a valid card has been read by checking the unique card code and general ID to ensure that they match the unique card code and general card ID stored in the remote database seen in box 64. Further, in step 66 the security algorithms are read from the smart card 26 by the remote server 32 to validate that the user is in possession of a valid trading card, and the game is permitted to run. The security algorithm derived from the smart card is combined with related security data contained in the game software as a protection against counterfeit trading cards.~~

Rotisserie Baseball

The electronic trading cards 11 may represent players in a baseball game. The user collects nine cards, each card representing one player for the nine positions on the baseball team. A user connects to the remote server 32 by selecting from an icon (shown in Figure 6) on his local computer the "rotisserie baseball" icon. The base system software loaded on the user's computer 25 will execute a connection sequence for connecting the modem of processor 27 to the Internet and remote server 32.

Once the server 32 responds and a connection is established, the server 32 would read in sequence each of the nine electronic trading cards of the user. By inserting each individual card into the reader 26, data from the trading card's ROM 21 is uploaded to the server 32, and the server 32 forms a team consisting of the user's nine players identified by each electronic trading card and displays the team members in a subsequent screen shown in Figure 7. During the process of setting up the teams, the server 28 running the game software would perform a check to make sure that other users are not using the same electronic trading cards. The remote server 28 maintains a database of the card-specific numbers, and prevents the formation of a team using the same trading card as long as the card remains active.

The general ID stored in the ROM 21 is checked by the game playing software running in server 32 to make sure that it corresponds to an appropriate card-specific code before forming a team. The server 32 also checks the card-specific code with respect to the general card ID to make certain that the two are related, to avoid any attempt at counterfeiting electronic trading cards.

Once the team has been assembled, the user is downloaded a graphic, such as that shown in Figure 7, representing each of the players on the field. The real life statistics for each of the players are entered by the system operator on the computer server 32 running the game software on a regular basis. A score is kept by forming a composite of the individual statistics of the players of a team, i.e., runs, errors made, hits and catches. Strike-outs and walks subtract points from a team. Game players may trade playing cards with other game players to enhance their score by acquiring cards representing players whose recent performance will raise the overall team score. Changing the player is effected by clicking on the change player icon and then reading the new trading card in reader 26.

The overall composite score of each of the teams is viewed on the user's computer screen 28 by clicking on the score icon. The various statistics used to derive the score are also displayed for each team.

The statistics of each individual player which were used to score the game may also be downloaded and written to the electronic trading card non-volatile memory 23. Thus, the information about the player may be available for display on the computer display 28 the next time the user reads the electronic trading card 11. If the user wishes to trade the card to another user, he must first deactivate the card by accessing the game playing software loaded on the server 32. The server 32 when it receives a command from the cardholder to remove the card from play, will note the status of the card as inactive in the server database 33 by writing to the field dedicated for this status in the record containing the card-specific identification number. Thus, a new user, when he attempts to use the card in a rotisserie based ball game, will enter the card and player into the game. Unless the system has deactivated the card at the request of the user, a

subsequent attempt to use the card to form another team will be refused by the game playing software running on server 32.

Wizards and Spell Game

Another illustration of another game type which can be implemented using the electronic playing cards and a related program on the computer server 32 will be described.

The electronic trading cards surfaces include an image of a fully-evolved wizard. The opposite side of the electronic trading card contains the wizard's name, spells the wizard must master, arch enemies of the wizard and a wizard master score that the wizard must achieve in order to play against another wizard. Stored within the smart card of the electronic trading card 11 is information related to the skill level of the wizard. As the player learns various spells and defeats any wizard's enemy, and masters the wizard's skills, the non-volatile memory 22 will be written with information relating to the progress of the player. Each time that the electronic trading card 11 is inserted into the card reader, the stored information is displayed on the display 28.

Play begins when the card is read to establish a connection between the local computer 25 and the server 32 having the game software. The base software installed into the viewer's local computer 27 produces an icon on the user's desktop. By double clicking on the icon, the web site for playing the game is accessed, and the user is presented with three choices concerning the game.

Figure 8 illustrates the three choices presented to the user. When the user enters the kingdom of the Evol Wizard, the second screen shown in Figure 9 is presented to the user. When the user is utilizing the electronic trading card for the first time, or has not achieved various wizard

evolution events, the image of the wizard will look like a child, not like the image on the electronic trading card. The display 28 will also contain vital spells, arch enemies, and the wizard's master score, as shown in Figure 10. The vital spells that the player has mastered and arch enemies defeated will be highlighted so that the player will know which events still need to take place in order to fully evolve and win a game. In addition, a current wizard mastery score is displayed beside the goal score as player information.

The game starts by having the wizard master certain spells. To accomplish this, the wizard will enter the Kingdom by clicking on the appropriate icon of Figure 9 to learn and practice spell-making. The user is provided with a screen, as is shown in Figure 11, with a list of magic words and a list of animals he must learn using the correct combination of magic words. If a user chooses a combination and makes one of the requisite animals, a simulated poof of smoke followed by a simulated disappearance of a displayed animal will appear on the screen. The name of the animal will be removed from the "spells needed" list and put on the "spells learned" list of Figure 10. If the combination of words selected do not constitute the animal, sparks will fly and a strange animal will appear, i.e., a dog with a rabbit's ears.

Thus, a player shown on the left of the screen changes the person on the right of the screen into an animal by invoking the correct word. If the wrong word is selected, a puff of smoke is generated, and sparks are displayed as well as a strange animal such as a dog having moose antlers.

When the user has learned all of the requisite spells, he gets a diploma screen, and he further moves on to battle other wizards.

Having learned the requisite spells, the user can battle with another wizard. The set-up for a battle between wizards is shown in Figures 12 and

13. In the first step, a room is set up having a group of tables, each with its own number. At a table is a crystal ball, and a user clicks to the side of a table where no one is standing. The wizard's name and picture will appear where the user clicks. Also, the user's name will appear below the wizard.

5 When a second user clicks on the other side of the table, that user's wizard's name, picture and user name will appear (all pictures of the wizard will be the same view). In addition, a parchment paper will appear over the crystal ball that says "Click here to play." When both players have clicked on the parchment, a new window comes up with a courtyard and a wizard
10 on either side, as shown in Figure 13. In the event a player pulls out early, a loss is recorded on the user's electronic playing card by writing to the non-volatile memory 23. The courtyard where the battle takes place will be identical to the courtyard in which the spells were learned.

Each user to the game is presented with a screen such as shown in
15 Figure 13, which shows his list of words on the left, constituting spells to be cast. The list of his opponent's spells will be obscured. The spell words will change from each player as each player casts a spell.

When a player's turn to cast a spell occurs, and when a wizard casts a spell, the wizard turns to an animal and a score is made. A set of five
20 rounds per game will be utilized in a preferred embodiment, and after five rounds the one who has correctly cast the highest number of spells wins the game.

Thus, there has been described with respect to several embodiments, interactive games which can be played between holders of a card. The
25 new interactivity provides two favorite pastimes, one that of collecting trading cards, and the other playing an interactive game.

The foregoing description of the invention illustrates and describes the present invention. Additionally, the disclosure shows and describes only the

preferred embodiments of the invention, but as aforementioned, it is to be understood that the invention is capable of use in various other combinations, modifications, and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or the skill or knowledge of the relevant art. The embodiments described hereinabove are further intended to explain best modes known of practicing the invention and to enable others skilled in the art to utilize the invention in such, or other, embodiments and with the various modifications required by the particular applications or uses of the invention. Accordingly, the description is not intended to limit the invention to the form disclosed herein. Also, it is intended that the appended claims be construed to include alternative embodiments.